

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	IB Docket No. 16-185
International Bureau Seeks Comment on)	
Recommendations Approved by)	
World Radiocommunication Conference)	
Advisory Committee)	

COMMENTS OF OMNISPACE LLC AND INTELSAT CORPORATION

Omnispace LLC (“Omnispace”) and Intelsat Corporation (“Intelsat”) respectfully submit these comments in response to the Public Notice (the “PN”) issued by the International Bureau on April 26, 2018, in the matter of the above proceeding.¹ The PN seeks comment on the draft recommendations provided by the World Radiocommunication Conference Advisory Committee (“WAC”) and draft proposals provided by the National Telecommunications and Information Administration. These issues will be considered by the International Telecommunication Union’s (ITU) 2019 World Radiocommunication Conference (“WRC-19”).

Introduction

Omnispace and Intelsat comments are limited to proposals addressing WRC-19 Agenda Item 9.1, Issue 9.1.1, contained in Attachment A of the PN. As stated in Attachment A of the PN, members were not able to reach consensus on a proposal for this

¹ See *International Bureau Seeks Comment on Recommendations Approved by World Radiocommunication Conference Advisory Committee*, Public Notice, IB Docket No. 16-185, DA 18-423 (Apr. 26, 2018) (“PN”).

agenda item. Two proposals, reflected as View A and View B, are included in Attachment A of the PN along with narrative justifications for each view.

Resolution **212 (Rev. WRC-15)**, *Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 2025 MHz and 2 110-2 200 MHz*, invites the ITU Radiocommunication Sector to “study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by the mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT.” Resolution **212 (Rev. WRC-15)** is the basis for WRC-19 Agenda Item 9.1, Issue 9.1.1.

The proposals contained in View A and View B both propose to modify Resolution **212 (Rev. WRC-15)**; however, the proposed modifications are fundamentally different. View A takes the general approach that technical and operational measures may be implemented to allow coexistence and compatibility between the terrestrial and satellite components of IMT. View B takes a specific approach, directly addressing the predicted interference by including a power limit in Resolution **212 (Rev. WRC-15)** and ensuring the coexistence and compatibility between the terrestrial and satellite components of IMT.

Analysis

With the exception of one scenario, ITU-R studies in response to this agenda item indicated compatibility may be achieved between the terrestrial and satellite components

of IMT in different geographical areas. However, ITU-R studies² show that the aggregate interference from IMT terrestrial base stations into IMT satellite receivers in the 1980-2010 MHz band is predicted to exceed the protection criterion by more than 50 dB in the worst cases, which is more than mitigation measures alone could address. Moreover, the interference is not limited to adjacent countries, but is predicted when the satellite IMT deployment is at a distance of as much as 10,000 km from the terrestrial IMT deployment. There is no ITU coordination procedure in the Radio Regulations to address interference from terrestrial transmitters into receiving space stations.

The View B proposal provides a mechanism to address this interference through modifications to Resolution **212 (WRC-15)**, effectively steering the use of the 1980-2010 MHz band as the uplink for transmissions from terrestrial IMT user equipment to base stations, a frequency arrangement included in Recommendation ITU-R M.1036-5.³ This frequency arrangement is effected in Resolution **212 (WRC-15)** by limiting the terminal transmitter output power delivered to the antenna of terrestrial IMT stations in the 1980-2010 MHz band to 23 dBm. This is the maximum power for user equipment indicated in

² See Working document towards a preliminary draft new [Recommendation or Report] ITU-R M.[MSS&IMT-ADVANCED SHARING] - Coexistence and compatibility study between the terrestrial component and the satellite component of IMT in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in different countries, Annex 8 to Working Party 4C Chairman's Report, Document 4C/343 (Feb. 26, 2018), available at <https://www.itu.int/md/R15-WP4C-C-0343/en>.

³ Recommendation ITU-R M.1036-5, *Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations*, available at <https://www.itu.int/rec/R-REC-M.1036-5-201510-I/en>

ITU-R Report M.2292⁴ (as well as 3GPP TS 25.101⁵) and the basis for the studies for agenda item 9.1.1. Since No. **5.389B** of the Radio Regulations mandates that the use of the 1980-1990 MHz band by the mobile-satellite service shall not cause harmful interference to, or constrain the development of, the mobile service in certain countries in Region 2, the power limit would apply only to the 1990-2010 MHz band in the countries listed in No. **5.389B**.

View A takes the approach that technical and operational measures may be implemented to allow coexistence and compatibility between the terrestrial and satellite components of IMT without addressing what those measures might be or how such measures might resolve the issue acknowledged in Resolution **212 (Rev. WRC-15)** that “some difficulties have been raised in addressing potential interference between the satellite and terrestrial components of IMT.” As observed above, there is no ITU coordination procedure for this case and the expected interference exceeds levels that can be mitigated by technical and operational measures. The View B approach addresses the predicted interference by adding a power limit to Resolution **212 (Rev. WRC-15)**, which protects the satellite component of IMT from harmful interference while enabling the deployment of the terrestrial component of IMT and achieving the objective of the agenda item, the compatibility and coexistence of the two services. The approach taken in View A would not achieve the objective of the agenda item.

⁴ Report ITU-R M.2292, *Characteristics of terrestrial IMT-Advanced systems for frequency sharing/interference analyses*, available at <https://www.itu.int/pub/R-REP-M.2292-2014>.

⁵ 3GPP TS 25.101, *User Equipment (UE) radio transmission and reception (FDD)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1151>.

Conclusion

Omnispace and Intelsat support the objective of WRC-19 “to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by mobile service and the mobile-satellite service in different countries and to facilitate development of both the satellite and terrestrial components of IMT.”

Coexistence and compatibility are vital for the efficient use of spectrum and for investment and deployment of satellite and terrestrial components of IMT.

When the 1980-2010 MHz band is used for the downlink from the IMT terrestrial base station to user equipment, studies show significant interference from IMT terrestrial base stations into IMT satellite receivers. When the 1980-2010 MHz band is used for the uplink from the terrestrial IMT user equipment to base stations, studies show compatibility. Omnispace and Intelsat endorse the outcome of these studies. By including a threshold for the maximum power for user equipment that is consistent with ITU-R Report M.2292⁶ and 3GPP TS 25.101⁷, the View B proposal supported by Omnispace and Intelsat provides a way to address the interference through modification to Resolution **212 (WRC-15)** without changing the ITU-R Table of Frequency Allocations. View B accomplishes the dual goals of enabling the development of the 1980-2010 MHz band by

⁶ Report ITU-R M.2292, *Characteristics of terrestrial IMT-Advanced systems for frequency sharing/interference analyses*, available at <https://www.itu.int/pub/R-REP-M.2292-2014>.

⁷3GPP TS 25.101, *User Equipment (UE) radio transmission and reception (FDD)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1151>.

both the satellite and terrestrial components of IMT without regulatory changes while satisfying the objective of agenda item 9.1.1.

Respectfully submitted,

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